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**REDACTED – FOR PUBLIC INSPECTION**

January 20, 2016

**By ECFS**

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, DC 20554

**Re: Notice of *Ex Parte* Letter, Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149**

Dear Ms. Dortch:

In accordance with the Protective Order in the above-captioned proceeding, NVIDIA Corporation submits the attached public, redacted version of its *ex parte* letter dated January 20, 2016. Redacted Highly Confidential information is denoted with “{{BEGIN HCI END HCI}}.” The designated Highly Confidential Information was taken from or derived from Highly Confidential Information in the Applicants’ filings or from NVIDIA’s proprietary and sensitive business information. A Highly Confidential version of this letter is being simultaneously filed with the Commission.

Please contact me with any questions.

Respectfully submitted,



Markham C. Erickson  
*Counsel for NVIDIA*

Enclosure

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***BY HAND DELIVERY***

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 Twelfth Street, SW  
Washington, DC 20554

**Re: Applications of Charter Communications, Inc., Time Warner Cable Inc., and  
Advance/Newhouse Partnership for Consent to Assign or Transfer Control of  
Licenses and Authorizations, MB Docket No. 15-149**

Dear Ms. Dortch:

The Commission has long recognized that competition in consumer devices and customer premises equipment (“CPE”) enhances consumer welfare. This recognition is anchored in the intuitive principle that competition begets innovation, and that innovation often is led not by the incumbent firm but by competitive providers, start-up firms, and other innovative actors in the ecosystem. For the last 47 years, the FCC’s decision in *Carterfone*,<sup>1</sup> has anchored the Commission’s actions to ensure consumers have the right to attach any lawful, non-harmful device to a network without interference or need to obtain approval from a gatekeeper intermediary. These actions have led to massive innovation and created an innovation-without-permission ecosystem that incentivizes innovators to bring new devices to market.<sup>2</sup> NVIDIA

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<sup>1</sup> See *Use of the Carterfone Message Toll Telephone Service, Decision*, 13 F.C.C.2d 420 (1968) (recognizing the right of consumers to attach non-harmful customer equipment to a telephone network, revolutionizing telephony and leading to massive telecommunications innovation).

<sup>2</sup> Matthew Lasar, *Any Lawful Device: 40 Years After the Carterfone Decision*, *Ars Technica* (June 26, 2008), <http://arstechnica.com/tech-policy/2008/06/carterfone-40-years>.

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Corporation (“NVIDIA”)<sup>3</sup> today asks the Commission once again to act in the public interest to prevent Charter Communications, Inc. from continuing to block use of the NVIDIA SHIELD Android TV console (“SHIELD TV”).

### NVIDIA SHIELD

SHIELD TV is an innovative, premium home entertainment system that transforms a user’s television experience with integration of 4K Ultra HD streaming, advanced gaming, and Android TV.<sup>4</sup> It allows a user to access popular apps from online video distributors like Netflix, YouTube, and HULU. It also enables a consumer to use over-the-top applications from popular video programmers such as HBO, Showtime, and FX. It includes a voice-activated interface that enables a user to command it to “launch Netflix” or “find Clint Eastwood movies.” Gamers can connect to NVIDIA’s gaming supercomputers to stream PC games or download games from the online app store.

Because of its extensive features and advanced technology, SHIELD TV has been extraordinary well-reviewed by both general media and tech enthusiasts.<sup>5</sup> The Wall Street

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<sup>3</sup> For more than two decades, NVIDIA has pioneered advanced computer graphics, inventing the first modern graphics processing unit. NVIDIA has leveraged its deep expertise in media technology to develop NVIDIA SHIELD TV.

<sup>4</sup> Developed by Google, Android TV is an open source platform that creates an interactive television experience, ergonomically designed for today’s modern televisions. *See generally* <https://shield.nvidia.com/android-tv>.

<sup>5</sup> *See e.g.*, Darrell Etherington, TechCrunch, *Nvidia Shield Review: The Best Way To Experience Android TV*, <http://techcrunch.com/2015/06/16/nvidia-shield-review-the-best-way-to-experience-android-tv/#.vlsme7b:NOM6> (June 16, 2015) (“the best Android TV device.”); Chris Velazco, Engadget, *NVIDIA Shield TV review: the best Android set-top box you can buy*, <http://www.engadget.com/2015/06/21/nvidia-shield-TV-review> (June 21, 2015); David Katzmaier, Cnet, *Nvidia Shield Android TV Review*, <http://www.cnet.com/products/nvidia-shield/2> (May 28, 2015) (“the most powerful Android TV experience around.”); Marco Chiappetta, Forbes, *Hands On With The NVIDIA SHIELD Android TV Device -- It's A Winner* (May 29, 2015) (“[I]f you’re in the market for a premium streaming device to pump as much high-quality content into your home theater as possible, which also happens to offer some killer gaming features, the NVIDIA SHIELD Android TV should be on your short list.”).

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Journal called it the “most powerful streaming TV set-top box ever made.”<sup>6</sup> It was the only media streaming device to win *Popular Science*’s 2015 “Best of What’s New” award.<sup>7</sup> In addition, SHIELD TV continues to innovate, regularly upgrading its software and adding more consumer-friendly features.<sup>8</sup>

SHIELD TV is the culmination of {{ BEGIN HCI      END HCI }} of years of product planning, involving {{ BEGIN HCI      END HCI }} in research and development.

### Popularity of Over-the-Top Devices

Increasingly, consumers are interested in a device<sup>9</sup> that enables them to watch over-the-top video content from online video distributors (“OVDs”) such as Netflix, YouTube, and HULU, as well as from cable television programmers. Today, Netflix and YouTube traffic by themselves represent 52% of prime-time Internet traffic.<sup>10</sup> Statistics from SHIELD TV users are

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<sup>6</sup> Nathan Olivarez-Giles, Wall Street Journal *NVIDIA Shield Review* (June 5, 2015), <http://blogs.wsj.com/personal-technology/2015/06/05/nvidia-shield-review-a-killer-machine-caught-between-two-worlds>.

<sup>7</sup> See Andrea Smith and Michael Nunez, Popular Science, *Best of What’s New 2015* (Nov. 18, 2015), <http://www.popsci.com/best-of-whats-new-2015/entertainment>.

<sup>8</sup> See Chris Daniel, *New Shield Upgrades*, <http://blogs.nvidia.com/blog/2016/01/05/shield-android-marshmallow> (January 5, 2016) (describing upgrades from Android 6.0); Chris Daniel, *4 More Reasons to Get SHIELD Android TV*, <http://blogs.nvidia.com/blog/2015/10/15/shield-android-tv> (Oct. 15, 2015) (describing various enhancements to SHIELD).

<sup>9</sup> The FCC has recognized the importance of so-called consumer premises equipment, noting that such equipment “is an integral part of viewing video programming,” and that “[c]hanges in consumer premises equipment and user equipment technology continue to have an important impact on competition in the video programming market.” See *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Sixteenth Report*, 30 FCC Rcd. 3253, 3405 ¶ 321 (2015).

<sup>10</sup> See Quartz (Dec. 7, 2015), (reporting Netflix and YouTube account for 34.7% and 16.88% of peak-period traffic in North America, respectively); see also *Over 70% of North American Traffic Is Now Streaming Video and Audio*, Sandvine (Dec. 7, 2015), <https://www.sandvine.com/pr/2015/12/7/sandvine-over-70-of-north-american-traffic-is-now->

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consistent with those figures. As the Commission has recognized, however, despite press reports of consumers “cutting the cord,” most households also want access to programming provided by traditional cable video programmers, such as HBO and Showtime, which are available through a cable television subscription. The cable television applications, such as HBO Go, are known as TV Everywhere (“TVE”) applications. SHIELD TV enables a user to seamlessly switch between OVD and TVE applications. Such seamless integration enables a user to switch between cable television programming and OVD content without the need to switch devices or remotes.

Typically, OVDs have a direct relationship with their users. For example, to access Netflix, a user accesses the Netflix SHIELD TV app and pays a monthly subscription fee for Netflix content. Other OVDs, such as YouTube, allow users to access some content without a subscription, instead earning revenue through advertising agreements. Under both models, OVDs want applications to run smoothly on as many different consumer devices as possible.<sup>11</sup>

TVE apps can only be accessed by a user who subscribes to a multi-channel video distributor’s (“MVPD”) cable service, and usually, the access is restricted to use within the MVPD’s footprint. Use of the TVE app typically is governed by contract between the cable television programmer and the MVPD. These contracts give the MVPD the ability to control whether and how the TVE app will work with CPE.

### **Charter Blocks Use of SHIELD**

Charter today blocks SHIELD TV from working with popular TVE apps that are otherwise available to consumers. These apps include HBO Go, Fox NOW, Fox Sports Go, Home & Garden TV, Food Network, Watch Travel Channel, and STARZ Play. Charter does not block use of these apps on other devices, including NVIDIA’s tablet device. In addition, these apps are not blocked on several other MVPD systems, demonstrating that there is no technical reason for Charter’s actions.

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streaming-video-and-audio.html (reporting that Netflix and YouTube are among the top sources of video traffic accounting for 37.1% and 17.9%, respectively).

<sup>11</sup> See Press Release, Netflix Is Now Available Around the World, Netflix Media Center (Jan. 6, 2016), <https://media.netflix.com/en/press-releases/netflix-is-now-available-around-the-world> (“Netflix is available on virtually any device that has an Internet connection, including personal computers, tablets, smartphones, Smart TVs and game consoles, and automatically provides the best possible streaming quality based on available bandwidth.”).

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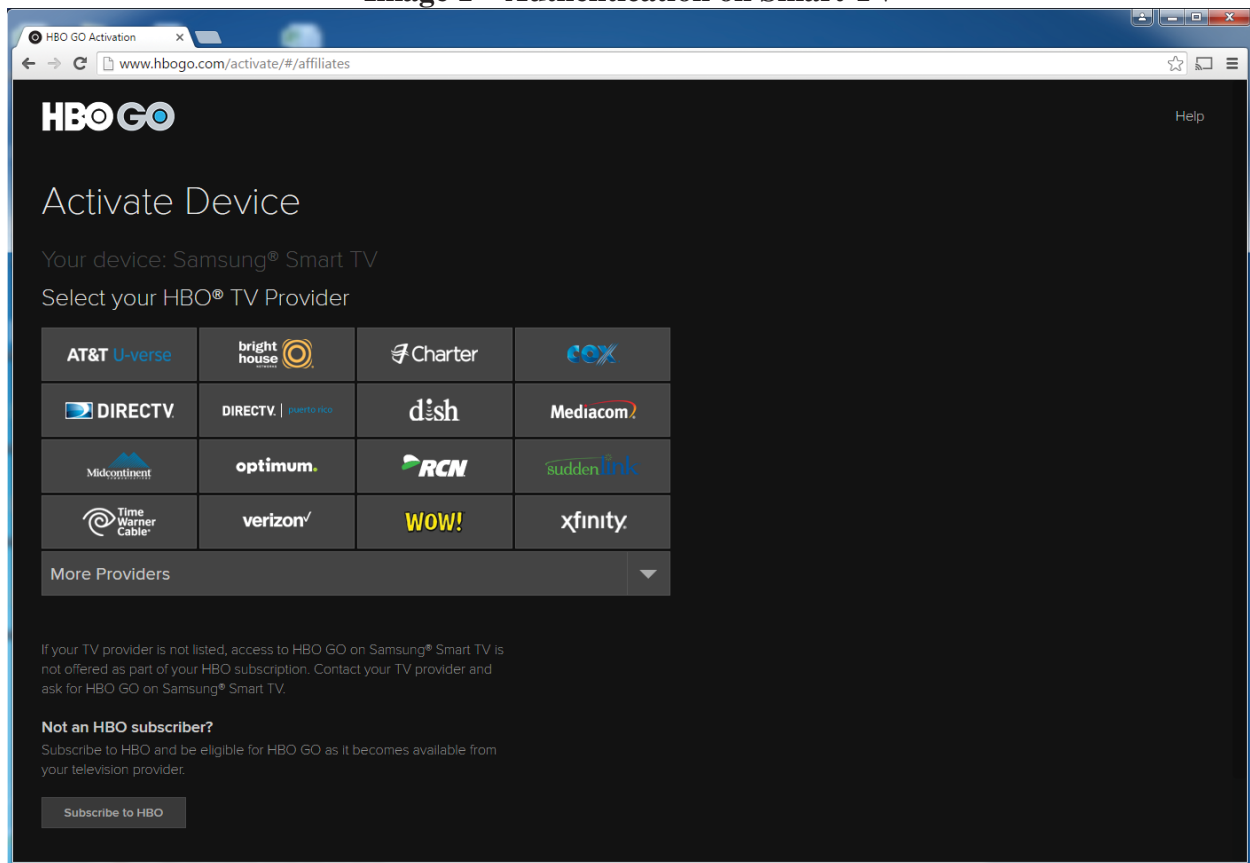
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Charter is able to block SHIELD TV from working properly through its control of the TVE authentication process. Typically, to access a TVE app, the app will direct the user to a Website that enables the user to select the MVPD to which the user subscribes. This “authentication” process ensures that a user who wants to watch HBO Go has a cable subscription with an MVPD. In Image 1 below, a user attempting to access HBO Go through a smart TV is directed to an HBO Website that enables the user to select Charter as her MVPD. When the user clicks on the Charter logo, Charter authenticates the user’s credentials and she can access HBO Go on her smart TV:

**Image 1 – Authentication on Smart TV**

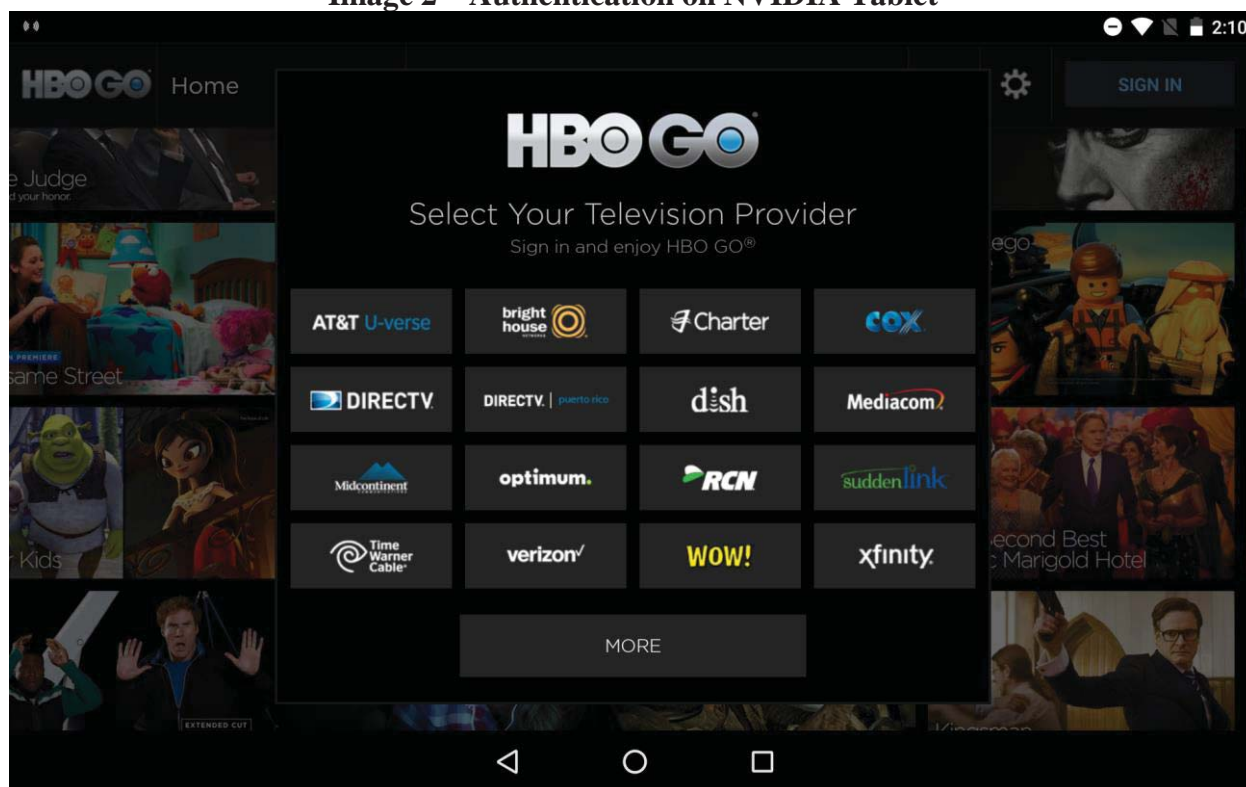


In Image 2, a user seeking to access HBO Go on a NVIDIA tablet also is shown a Charter logo, which enables her to access HBO Go on her tablet:



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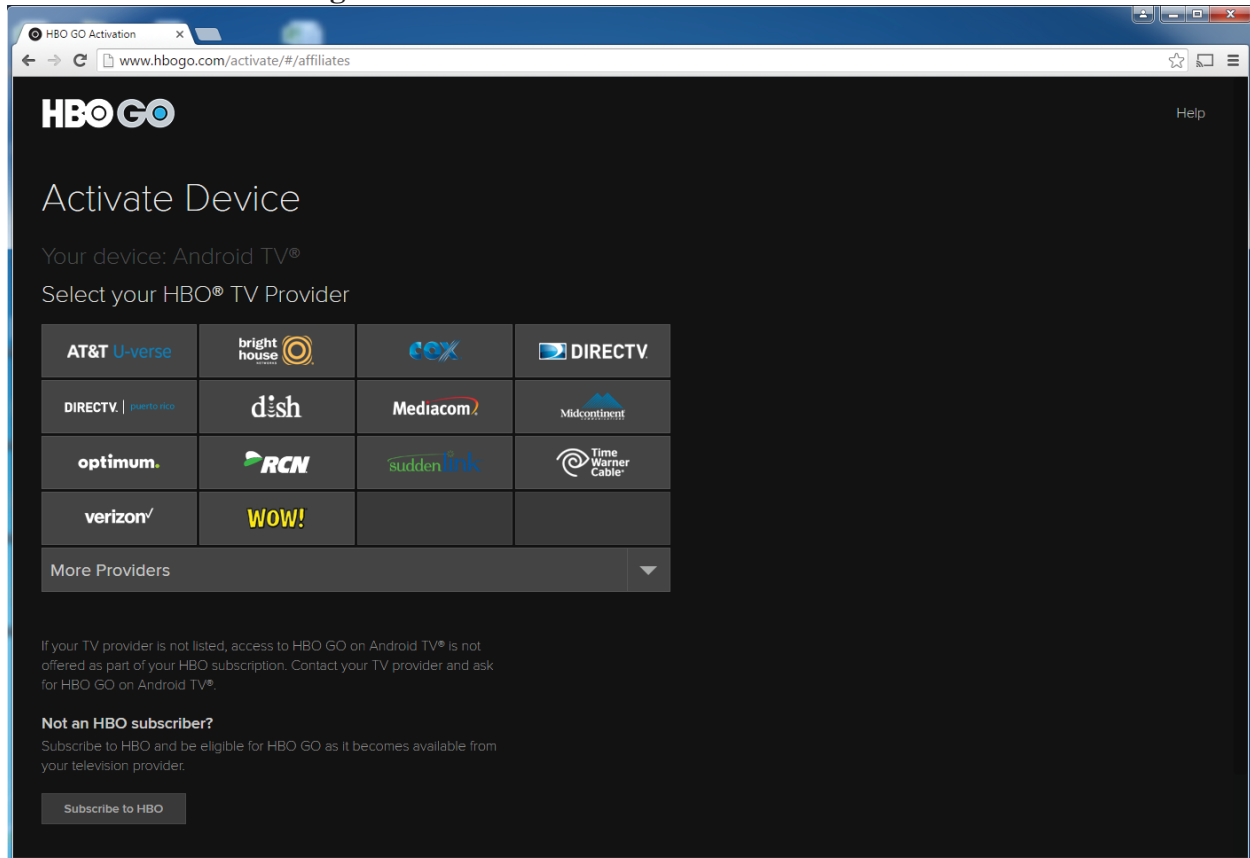
Image 2 – Authentication on NVIDIA Tablet



When a consumer attempts to use SHIELD TV to access HBO Go, however, she is directed to an HBO Website, as shown in Image 3, where the Charter logo is absent. The user has no way to authenticate her TVE app, because Charter has refused to authenticate such apps for use with SHIELD TV:

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Image 3 – Charter Blocks Authentication on SHIELD TV<sup>12</sup>



<sup>12</sup> Note that in the example of HBO Go on SHIELD TV in Image 3, Time Warner Cable is listed as an available provider while Charter is not. Time Warner Cable has been more willing to integrate with SHIELD TV than Charter, though Time Warner Cable also blocks use of certain TVE apps on SHIELD TV. NVIDIA is concerned that if the transaction is consummated, Charter will discontinue Time Warner Cable's more open policies toward third party device manufacturers. See Joan E. Solsman, *Time Warner Cable will let you junk your set-top box next year*, CNET (Sept. 11, 2013) (quoting TWC CEO Robert Marcus as saying "we will be knocking down some of the current obstacles that are in the way of not just having the TWC TV experience be a complementary service to the delivery of video via the leased set-top box but also a replacement service so that customers can have nothing but a Roku device or an Xbox and get their video experience."). NVIDIA is in ongoing discussions with Time Warner Cable to resolve outstanding authentication problems.

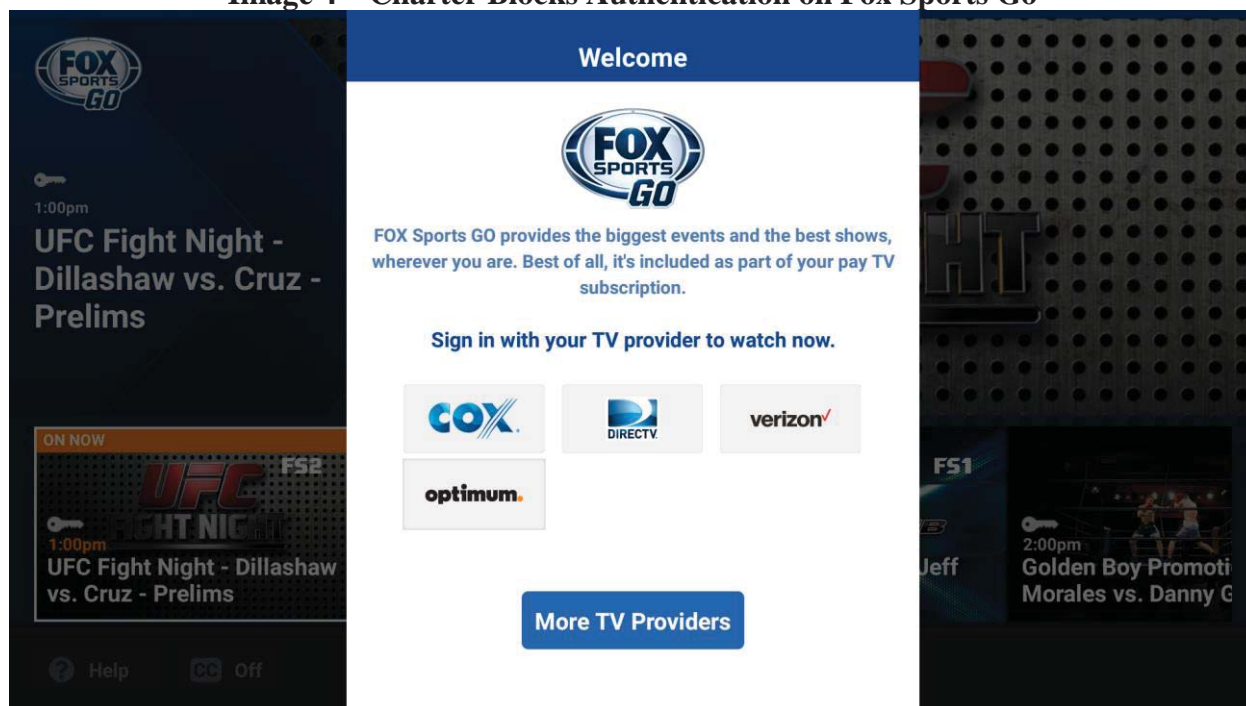


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HBO Go's Help Center Website explains that while Charter supports use of any iPad, iPhone, Kindle Fire, Xbox 360, Xbox One, Samsung Smart TV, or Android Smartphone, among other devices, Charter "does not currently support access to HBO Go on Android TV." HBO further suggests users reach out directly to Charter.<sup>13</sup>

In the following example, using the Fox Sports Go app, neither Charter nor Time Warner Cable permit authentication from SHIELD: TV

**Image 4 – Charter Blocks Authentication on Fox Sports Go**



The Commission has recognized that one of the factors consumers consider when purchasing CPE is the availability of content on the device.<sup>14</sup> The fact that Charter blocks SHIELD TV but does not block use of devices with which SHIELD TV competes, and against which reviewers have said SHIELD TV provides a better product, puts SHIELD TV at an

<sup>13</sup> See <https://help.hbogo.com/hc/en-us/articles/216104167-I-am-trying-to-activate-HBO-GO-on-my-Android-TV-and-Charter-is-not-listed-Why>.

<sup>14</sup> Annual Assessment of the Status of Competition in the Market for Delivery of Video Programming at ¶ 321, MB Docket No. 14-16 (April 2, 2015).

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artificial competitive disadvantage in the marketplace. In other words, despite NVIDIA's investing to develop the most innovative home entertainment system in the market, Charter blocks its use and gives NVIDIA's competitors an advantage not based on innovation or consumer choice, but rather based on the fact that Charter has made a strategic decision to block SHIELD.

There is no technical reason why Charter should block use of SHIELD TV. It is a lawful, non-harmful device. Indeed, SHIELD TV works with the systems of many other MVPDs. Further, the TVE content available through these apps is content for which Charter's subscribers *already have paid* as part of their Charter video subscription. While some programmers offer access to their content outside of a cable subscription,<sup>15</sup> Charter's customers should not have to pay twice simply to access content they for which they already paid and are entitled to access on a device of their choosing.

Charter authenticates TVE apps on other devices including NVIDIA's SHIELD tablet device, which runs a version of the Android operating system designed for mobile devices. It appears that Charter specifically blocks SHIELD TV, which runs the Android TV operating system, because some users prefer it as a substitute for Charter's own set top box. The fact that Charter has invested heavily in its own set top box provides Charter with incentive to protect its investment at the expense of its customers.<sup>16</sup> An internal Charter presentation highlights Charter's total control over the authentication process for TVE apps. This document includes {{  
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<sup>15</sup> See [http://help.hbonow.com/app/answers/detailHBO/a\\_id/125](http://help.hbonow.com/app/answers/detailHBO/a_id/125) ("HBO NOW is a stand-alone streaming service that you can purchase from a participating provider (not part of a cable subscription)").

<sup>16</sup> Indeed, by the end of 2015, Charter had invested {{ **BEGIN HCI**

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Additionally, {{ BEGIN HCI

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If the transaction is approved, Charter would grow 325%, from controlling access to 4.3 million video subscribers to controlling access to over 17 million video subscribers. As Charter plans to incorporate its proprietary set top box in a new footprint that would control access to nearly a third of the country, post-merger Charter would have the incentive and ability to continue to block SHIELD TV.

**The Commission Should Impose Conditions on the Proposed Transaction**

The anticompetitive harms described above can be addressed by carefully tailored conditions. NVIDIA respectfully requests that the Commission impose conditions on the proposed transaction that would prohibit Charter from restricting, degrading, or otherwise interfering with the use of SHIELD TV and other lawful, non-harmful devices.

Respectfully submitted,



Markham C. Erickson  
*Counsel for NVIDIA*

CC: Brian E. Cabrera, Senior Vice President and General Counsel, NVIDIA Corporation  
(Public version)  
Stephanie Weiner, Senior Legal Advisor, Federal Communications Commission  
Owen Kendler, Office of General Counsel, Federal Communications Commission

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